

**FORM XIII. DATA FORM FOR THE ESTIMATION OF MULTIPLE ZONE
BIODEGRADATION FROM UNIT CONCENTRATIONS**

NAME OF THE FACILITY for site specific biorate determination	
COMPOUND for site specific biorate determination	
Number of zones in the biological treatment unit	1
VOLUME of full-scale system (cubic meters)	2
Average DEPTH of the full-scale system (meters)	3
FLOW RATE of wastewater treated in the unit (m ³ /s)	4
Recycle flow of wastewater added to the unit, if any (m ³ /s)	5
Concentration in the wastewater treated in the unit (mg/L)	6
Concentration in the recycle flow, if any (mg/L)	7
Concentration in the effluent (mg/L).	8

TOTAL INLET FLOW (m ³ /s) line 4 plus the number on line 5	9
TOTAL RESIDENCE TIME (s) line 2 divided by line 9.	10
TOTAL AREA OF IMPOUNDMENT (m ²) line 2 divided by line 3	11

Zone number	Concentration for zone, C _i (mg/L)	Area of the zone, A (m ²)	Estimate of KL in the zone (m/s) from Form II	AIR STRIPPING KL A C _i (g/s)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
TOTALS sum for each zone.	12		13	

Removal by air stripping (g/s). Line 13.	14
Loading in effluent (g/s). Line 8 times line 9.	15
Total loading (g/s). (Line 5 * line 7) + (line 4 * line 6).	16
Removal by biodegradation (g/s) Line 16 minus (line 14 + line 15).	17
Fraction biodegraded: Divide line 17 by line 16..	18
Fraction air emissions: Divide line 14 by line 16.	19
Fraction remaining in unit effluent: Divide line 15 by line 16.	20

[62 FR 2801, Jan. 17, 1997, as amended at 63 FR 67794, Dec. 9, 1998; 66 FR 6935, Jan. 22, 2001]

**APPENDIX D TO PART 63—ALTERNATIVE
VALIDATION PROCEDURE FOR EPA
WASTE AND WASTEWATER METHODS**

1. Applicability

This procedure is to be applied exclusively to Environmental Protection Agency methods developed by the Office of Water and the Office of Resource Conservation and Recovery. Alternative methods developed by any other group or agency shall be validated ac-

cording to the procedures in Sections 5.1 and 5.3 of Test Method 301, 40 CFR part 63, appendix A. For the purposes of this appendix, "waste" means waste and wastewater.

2. Procedure

This procedure shall be applied once for each waste matrix. Waste matrix in the context of this procedure refers to the target compound mixture in the waste as well as the formulation of the medium in which the

target compounds are suspended. The owner or operator shall prepare a sampling plan. Wastewater samples shall be collected using sampling procedures which minimize loss of organic compounds during sample collection and analysis and maintain sample integrity. The sample plan shall include procedures for determining recovery efficiency of the relevant compounds regulated in the applicable subpart. An example of an acceptable sampling plan would be one that incorporates similar sampling and sample handling requirements to those of Method 25D of 40 CFR part 60, appendix A.

2.1. Sampling and Analysis

2.1.1. For each waste matrix, collect twice the number of samples required by the applicable regulation. Designate and label half the sample vials the "spiked" sample set, and the other half the "unspiked" sample set. Immediately before or immediately after sampling (immediately after in the context of this procedure means after placing the sample into the sample vial, but before the sample is capped, cooled, and shipped to the laboratory for analysis), inject, either individually or as a solution, all the target compounds into each spiked sample.

2.1.2. The mass of each spiked compound shall be 40 to 60 percent of the mass expected to be present in the waste matrix. If the concentration of the target compounds in the waste are not known, the mass of each spiked compound shall be 40 to 60 percent of the limit allowed in the applicable regula-

tion. Analyze both sets of samples (spiked and unspiked) with the chosen method.

3. Calculations

For each pair of spiked and unspiked samples, determine the fraction of spiked compound recovered (R) using the following equations.

where:

m_r = mass spiked compound measured (μ g).

m_s = total mass of compound measured in spiked sample (μ g).

m_u = total mass of compound measured in unspiked sample (μ g).

where:

S = theoretical mass of compound spiked into spiked sample (μ g).

3.1. Method Evaluation

In order for the chosen method to be acceptable for a compound, $0.70 \leq R \leq 1.30$ (R in this case is an average value of all the spiked and unspiked sample set R values). If the average R value does not meet this criterion for a target compound, the chosen method is not acceptable for that compound, and therefore another method shall be evaluated for acceptance (by repeating the procedures outlined above with another method).

3.2. Records and Reports

Report the average R value in the test report and correct all reported measurements made with the method with the calculated R value for that compound by using the following equation:

$$\text{Reported Result} = \frac{\text{Measured Mass of Compound}}{\text{R for that compound}}$$

3.3. Optional Correction Step

If the applicable regulation allows for correction of the mass of the compound in the waste by a published f_m value, multiply the reported result calculated above with the appropriate f_m value for that compound.

[61 FR 34200, July 1, 1996, as amended at 74 FR 30230, June 25, 2009]

APPENDIX E TO PART 63—MONITORING PROCEDURE FOR NONTHOROUGHLY MIXED OPEN BIOLOGICAL TREATMENT SYSTEMS AT KRAFT PULP MILLS UNDER UNSAFE SAMPLING CONDITIONS

I. Purpose

This procedure is required to be performed in subpart S of this part, entitled National Emission Standards for Hazardous Air Pollutants from the Pulp and Paper Industry.

Subpart S requires this procedure in §63.453(p)(3) to be followed during unsafe sampling conditions when it is not practicable to obtain representative samples of hazardous air pollutants (HAP) concentrations from an open biological treatment unit. It is assumed that inlet and outlet HAP concentrations from the open biological treatment unit may be obtained during the unsafe sampling conditions. The purpose of this procedure is to estimate the concentration of HAP within the open biological treatment unit based on information obtained at inlet and outlet sampling locations in units that are not thoroughly mixed and, therefore, have different concentrations of HAP at different locations within the unit.